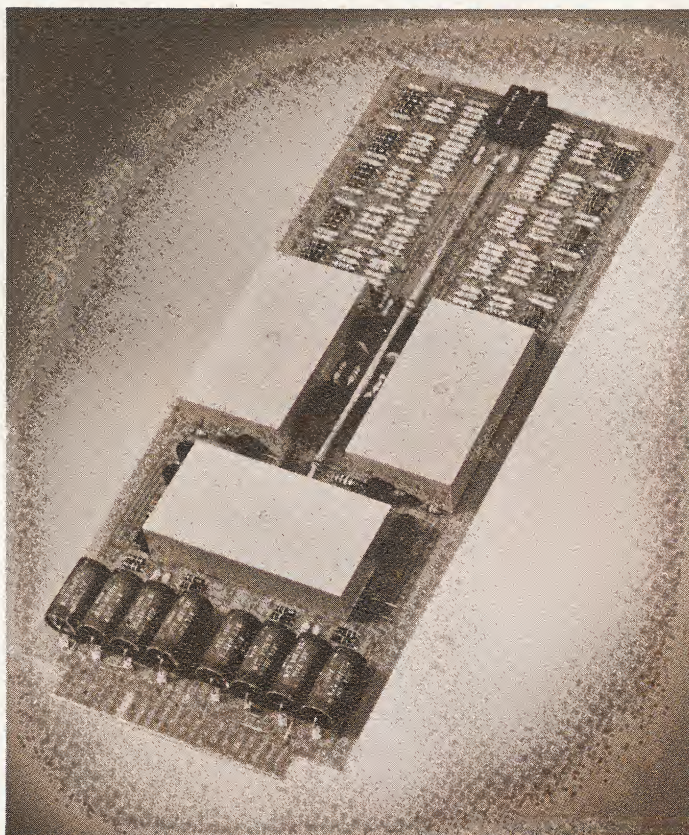


ELECTRONIC MULTIPLIERS

MODELS 502 & 502A



ZELTEX, INC.



- ALL SOLID STATE
- MINIMUM COMPONENT COUNT
- INVERTERS BUILT-IN
- OVERVOLTAGE INDICATION
- WIDEBAND ACCURACY

DESCRIPTION

The Zeltex 502 series are quarter-square electronic multipliers which offer high static accuracy and operational versatility. Using a new design technique, these multipliers require a minimum number of solid-state components which insures high reliability and low cost. Two versions are offered; the 502 accepts four input signals, $\pm X$ and $\pm Y$, while the 502A incorporates inverting amplifiers and only requires two input signals, $+X$ and $+Y$. □ These units effectively use an 84 line segment approximation to the square law over the range from

-100 to $+100$ volts. Each square law channel has been designed to correct output for very small input signals, so that true multiplication exists for small input signals. The square law relationship is preserved over a 104 volt range, and an overvoltage signal is available when $\frac{|X| + |Y|}{2} \geq 102$ v. The multipliers can be programmed externally (without having to alter jumpers on the plug-in card) to function as a multiplier, a divider, a pair of independent squaring networks, or for dual square root extraction.

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SPECIFICATIONS

(All specifications using Zeltez amplifiers or equivalent)

	Model 502	Model 502A
INPUT VOLTAGE	$\pm X, \pm Y$	$+X, +Y$
INPUT RANGE	$ X + Y \leq 200 \text{ v}$	$\pm 100 \text{ v}$
OUTPUT	$-XY/100$	$-XY/100$
OUTPUT RANGE*	$\pm 100 \text{ v}$	$\pm 100 \text{ v}$
MAXIMUM STATIC ERROR		
$X = 0, Y = 0$	2 mv	2 mv
$X = 0, Y = \pm 100$ or $Y = 0, X = \pm 100$	20 mv	20 mv
$X = \pm 100, Y = \pm 100$	50 mv	50 mv
DYNAMIC ERROR		
at 100 cps	100 mv peak	100 mv peak
at 1000 cps	1 volt peak	1 volt peak
FREQUENCY RESPONSE (-3 db)	40 kcs	40 kcs
OUTPUT NOISE (0 to 100 kc)	15 mv, p-p	15 mv, p-p
INPUT IMPEDANCE	50k ohm	50k ohm
TEMPERATURE COEFFICIENT	2 mv/°F	2 mv/°F
NUMBER OF GAIN ADJUSTMENTS	2	2
POWER REQUIREMENTS	$\pm 100 \text{ v @ } 15 \text{ ma}$	$\pm 100 \text{ v @ } 20 \text{ ma}$ $\pm 130 \text{ v @ } 10 \text{ ma}$
PHYSICAL SIZE	4.8" x 12.4"	4.8" x 12.4"

*Available at the output of an external amplifier. To insure a precise scale factor, the 100k ohm feedback resistors are matched and available within the multipliers.